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"Tool" Use by the Red-tailed Hawk (*Buteo jamaicensis*)

Perhaps the best documented example of regular tool use for a falconiform is the Egyptian Vulture (*Neophron percnopterus*) striking an Ostrich (*Struthio camelus*) egg with a stone (J. van Lawick-Goodall and H. van Lawick-Goodall 1966, *Nature* 212:1468–1469; R.K. Brooke 1979, *Ostrich* 50:257–258). Another species, the Lammergeier (*Gypaetus barbatus*), routinely drops bones on stone slabs to gain access to the marrow within (L. Brown and D Amadon 1968, Eagles, hawks and falcons of the world, McGraw-Hill, New York, NY U.S.A.). Some, however, would argue that, because the stone is not manipulated, the bone-dropping Lammergeier is not actually using a tool. Another reported example of tool use is the Ferruginous Hawk (*Buteo regalis*) that allegedly cast a stone at a human intruder near its nest (C.L. Blair 1981, *Raptor Research* 15:120).

The following may be yet another example of tool use by a raptor. On 5 June 1985, we observed an adult Red-tailed Hawk (*Buteo jamaicensis*) soaring low (ca 15 m) over the grass-covered slopes of the Galiuro Mountains in southern Arizona. The bird had, probably just moments before, captured a ca 1 m snake (probably a glossy snake, *Arizona elegans,* judging by size, shape and color). When the hawk passed near us, it was holding the snake by both feet near the snake's midpoint. With head elevated and mouth open, the snake appeared intent upon biting the hawk. When the hawk was ca 100 m distant from us, it made several shallow stoops over a scattered group of large boulders. On some (and perhaps all) passes, the bird swept sharply upward as it passed over and nearly collided with a boulder. The centrifugal force associated with this change in direction caused the snake to pendulate below the hawk's talons and strike the boulder. During one pass, we observed the snake's head and tail flipping up behind the hawk after slapping the boulder. Not all swoops were over the same boulder, but one particularly obtrusive (ca 1 m tall) boulder was used at least twice. On the last two swoops, the snake hung limp and apparently lifeless from the hawk's talons After the last swoop, the hawk dropped out of sight into tall grass ca 200 m from our position and presumably ate the snake because we could observe no prey in the hawk's talons when it soared up 13 min later.

If the anvil (not held in the hand) is a tool as well as the hammer (held in the hand), then the Red-tailed Hawk may be added to the short list of raptors that have been known to use tools.—**David H. Ellis and Shawn Brunson, U.S. Fish and Wildlife Service, Patuxent Wildlife Research Center, Laurel, MD 20708 U.S.A.**